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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,545	10/06/2003	Michael S. Choi	06558/011002	3325

7590

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Patricia A. Meier  
ConocoPhillips Company IP Legal  
P.O. Box 2443  
Bartlesville, OK 74005

EXAMINER

NEWVILLE, TONI E

ART UNIT

PAPER NUMBER

3671

DATE MAILED: 12/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/679,545

Applicant(s)

CHOI, MICHAEL S.

Examiner

Toni Newville

Art Unit

3671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____  | 6) <input type="checkbox"/> Other: ____                                     |

## **DETAILED ACTION**

### ***Specification***

1. The abstract of the disclosure is objected to because:
  - Line 2, "tank located or the seabed" should be "tank located on the seabed"Correction is required. See MPEP § 608.01(b).
2. The disclosure is objected to because of the following informalities:
  - Page 8, paragraph 35, line 35: "pertains" should be deleted.
  - Page 10, paragraph 39, line 3: "surface buoy 106" should be "subsurface buoy 106"Appropriate correction is required.

### ***Claim Objections***

3. Claim 3 is objected to because of the following informalities: the limitation "the storage tank" recited in line 4 has no antecedent basis. Appropriate correction is required.
4. Claim 8 is objected to because of the following informalities: the limitation "the vessel storage tanks" recited in lines 1-2 has no antecedent basis. Appropriate correction is required.
5. Claim 14 is objected to because of the following informalities: in line 6, "sub0-sea" should be "sub-sea". Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States

7. Claims 1, 2, 7-13, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Thompson, GB 1596330.

Regarding claim 1, Thompson discloses a method for developing a sub-sea hydrocarbons field, comprising:

- Liquefying natural gas aboard a vessel using a liquid coolant aboard the vessel to obtain liquefied natural gas (page 1 lines 56-63);
- Transporting the liquefied natural gas to an onshore terminal (page 2 lines 43-45);
- Re-gasifying the liquefied natural gas (page 3 lines 9-17); and
- Obtaining a new batch of liquid coolant using energy recovered from the re-gasifying the liquid natural gas (page 3 lines 24-27).

Regarding claim 2, the liquid coolant comprises liquid nitrogen (page 2 lines 1-3) and the method further comprises transporting the new batch of liquid nitrogen offshore aboard the vessel inherently using a plurality of storage tanks (page 2 lines 40-48).

Regarding claim 7, the method further comprises liquefying a new batch of natural gas using the new batch of liquid nitrogen aboard the vessel (page 2 lines 48-51).

Regarding claim 8, one of a plurality of storage tanks aboard the vessel is inherently empty to receive an initial portion of the liquefied natural gas (page 2 lines 43-45).

Regarding claim 9, the re-gasifying the liquid natural gas is performed at the onshore terminal (page 2 lines 77-78 and page 3 lines 9-17)

Regarding claim 10, the re-gasifying the liquefied natural gas produces high pressure gas (page 3 lines 17-22).

Regarding claim 11, the method further comprises sending the high pressure gas to a pipeline (page 3 lines 30-34).

Regarding claim 12, transporting the liquefied natural gas to the onshore terminal is performed using the vessel (page 2 lines 45-46).

Regarding claim 13, Thompson discloses a system for developing an oil and gas field, comprising:

- A vessel configured to liquefy natural gas to obtain liquefied natural gas using liquid nitrogen aboard the vessel (page 1 lines 56-64); and
- An onshore terminal configured to obtain a new batch of liquid nitrogen using refrigeration recovered from re-gasifying the liquefied natural gas (page 2 lines 77-78).

Regarding claim 17, Thompson discloses an apparatus for developing a sub-sea hydrocarbons field, comprising:

- Means for liquefying natural gas aboard a vessel using liquid nitrogen aboard the vessel to obtain liquefied natural gas (page 1 lines 56-64);

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- Means for transporting the liquefied natural gas to an onshore terminal (page 2 lines 43-46);
- Means for re-gasifying the liquefied natural gas (page 3 lines 9-17); and
- Means for obtaining a new batch of liquid nitrogen using energy recovered from the re-gasifying the liquefied natural gas (page 3 lines 24-27).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3-6, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson, GB 1596330, in view of Moore, US 6062313.

Regarding claims 3, 6 and 14-16, Thompson discloses a method and system for developing a sub-sea hydrocarbons field as described above with respect to claim 1, including conveying produced gas to the vessel. Thompson fails to disclose de-gasifying hydrocarbons obtained from the sub-sea hydrocarbons field to produce oil and gas, and conveying the produced oil to a storage tank on the seabed.

Like Thompson, Moore discloses a method and system for developing a sub-sea hydrocarbons field, including conveying produced gas to a vessel (26). Unlike Thompson, Moore further discloses de-gasifying hydrocarbons obtained from the sub-

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sea hydrocarbons field to produce oil and gas (page 6 lines 29-35 and page 5 lines 20-25), and conveying the produced oil to a storage tank (40) on the seabed (Fig. 1) (claims 3 and 6). Moore also discloses the produced gas being conveyed to the vessel via a riser (Fig. 1, page 3 lines 40-41) (claims 4 and 14).

Given the suggestion in Moore, it would have been obvious to one of ordinary skill in the art to incorporate the fluid separation and seabed oil storage method and system taught in Moore into the method and system of Thompson because most natural gas fields have associated oil production that must be stored or piped to shore (Thompson; page 16-19), and seabed tanks provide an economical, environmentally-safe, and transportable storage means.

Regarding claims 5 and 15, Thompson discloses pre-treating the produced gas before liquefying (page 1 lines 69-75).

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson, GB 1596330, in view of Moore, US 6062313, as applied to claim 14 above, and further in view of Giannesini et al., US 5295546.

Thompson and Moore disclose a combination of systems for developing an oil and gas field as described above with respect to claim 14, but fail to disclose a power and control buoy configured to provide electric power and control functions for the sub-sea separation system.



Like the combination, Giannesini discloses a system for developing an oil and gas field. Unlike the combination, Giannesini further discloses a power and control buoy configured to provide electric power and control functions for sub-sea operations (column 7 lines 1-8).

Given the suggestion in Giannesini, it would have been obvious to one of ordinary skill in the art to include a power and control buoy in the system of the combination of Thompson and Moore because providing power and control via a buoy allows for continuous electrical power to sub-sea operations, even when the vessel is transporting liquefied natural gas to shore.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toni Newville whose telephone number is (571) 272 - 1548. The examiner can normally be reached on Monday - Friday 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas B. Will can be reached on (571) 272-6998. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Toni Newville  
December 1, 2005



**THOMAS B. WILL**  
Supervisory Patent Examiner  
Group 3600